

Telemetry Analysis Confidence Test - EOC4

The Spacecraft (S/C) Analysis Service provides the capabilities needed for management of the on-board systems and for overall mission monitoring. It allows the EOC operators to monitor and manage the S/C system configurations and resources; perform real-time (R/T) and off-line analyses of S/C bus and instrument data to track performance and trends, and detect and isolate anomalies. These analysis functions are provided on a non-interference basis with R/T telemetry processing functions. Only a subset of the analysis functions is provided in real time through the use of a FOS User Interface (FUI) R/T Analysis and SSR Analysis tools.

The Analysis Service evaluates the performance of the S/C subsystems and the status of instruments. Performance data is obtained from the analysis of spacecraft recorder and R/T housekeeping, and historical telemetry. The historical telemetry is retrieved from either short-term (FOS DMS) or long-term storage (SDPS). The EOC reports on the quality of the data used for the analysis, reports failures detected, and identifies marginal system operation. The EOC enables operators to analyze the performance of the power, command and data handling, thermal, communications, and guidance navigation and control subsystems.

Test Objectives:

The objectives of the test are:

- Verify that the EOC can receive, process, and analyze S/C bus and instrument data to track performance and trends, and detect and isolate anomalies in real-time (R/T) or off-line.
- Verify that system statistics (discrete, and limit) are automatically generated at the EOC for telemetry parameters on daily, monthly, orbital, and mission-to-date time spans.
- Verify that user-defined statistics (min-max-mean and standard deviation) for a specified time interval can be generated for a selected set of telemetry parameters.
- Verify that the following types of requests can be performed: Quick Analysis, Replays, and Standing Orders.
- Verify that the EOC can perform S/C Clock correlations to Coordinated Universal Time (UTC).
- Detect and isolate faults in Solid-State Recorder (SSR) playbacks.
- Verify that the EOC can apply algorithms to S/C telemetry during off-line analysis.
- Verify that carry-out files can be generated by the FOS Analysis Subsystem to contain the following: AM-1 S/C housekeeping data, AM-1 S/C health and safety data, and AM-1 diagnostic data, Network Control Center (NCC) User Performance Data (UPD) message data, and EDOS Customer Operations and Data Accounting (CODA) message data.
- Verify that S/C Analysis System (SAS) can receive carry-out files, SSR trash buffer files, and standard analysis products for specialized mission analyses which are not supported by the FOS Analysis Subsystem.

- Verify the storage and retrieval of carry-out files and other analysis products from the local EOC archive (short-term storage) and the GSFC DAAC (long-term storage).
- Verify that the analysis products can be provided in both hardcopy and softcopy form.

Test Configuration:

Hardware and software configurations at each ECS site are managed and tracked by the M&O organization at that site. The configuration that is tested against will be provided in the test report.

(See Exhibit EOC4-1.1)

Participants and Support Requirements:

Participants:

FOT, ETS Operators, EDOS LZPF (M&O personnel), I&T Conductor, GSFC DAAC (M&O personnel)

Communications:

Voice Circuits

SCAMA 264	EOC, EDOS
CCL 74	EOC, EDOS
CCL 75	EOC, EDOS, EQUIPT ROOM
CCL 94	EOC, EDOS, ETS
CCL 113	EOC, EDOS, EBnet

Data - EBnet circuit between ETS MPS and EDOS LZPF
 EBnet circuit between EDOS LZPF and EOC

IP addresses:

Operational LAN	198.118.199.0
Support LAN	198.118.200.0

Equipment and Software:

SAS workstation at the EOC (1 with display, host-attached printer, ftp),

EOC workstations (36 with ftp)

Servers: Real-time Server (3), Data Server (3), Multicast Server (3)

Data Storage Unit (File Servers [3], RAID Units [2])

Printers: Laser (4), Line (4), Color (4)

FOS Release B

Test Tools:

1. **ETS MPS** (S/C simulation mode) - sends telemetry in CADU format to the EDOS. **ETS MPS** (EDOS simulation mode) - sends telemetry in EDU format to the EOC (Note: This mode will be used if the ETS LRS is not available.).
2. **ETS LRS** - simulates EDOS, serving as a functional EDOS interface between the EOC and the AM-1 S/C or an AM-1 S/C simulator.

3. **ETS HRS** - provides high-rate telemetry (150 Mbps) in CADU format to EDOS or to the ETS MPS via a H/K file.
4. **SSIM** - simulates the AM-1 S/C and provides telemetry in CADU format to the ETS LRS.
5. **NCC Simulator** - provides NCC ground telemetry.

Test Prerequisites:

Dynamic pages containing alphanumerics, tables, graphs, and “NODATA” and “STATIC” flag indicators (use the Display Builder); rooms (use the Room Builder); event messages (use the Quick Message Generator); and report templates (use the Report Selector: On Demand, Periodic, and Custom dialogs); tables containing predetermined telemetry parameter values to be compared with resulting decommutated and EU converted values; and ETS scenario script files.

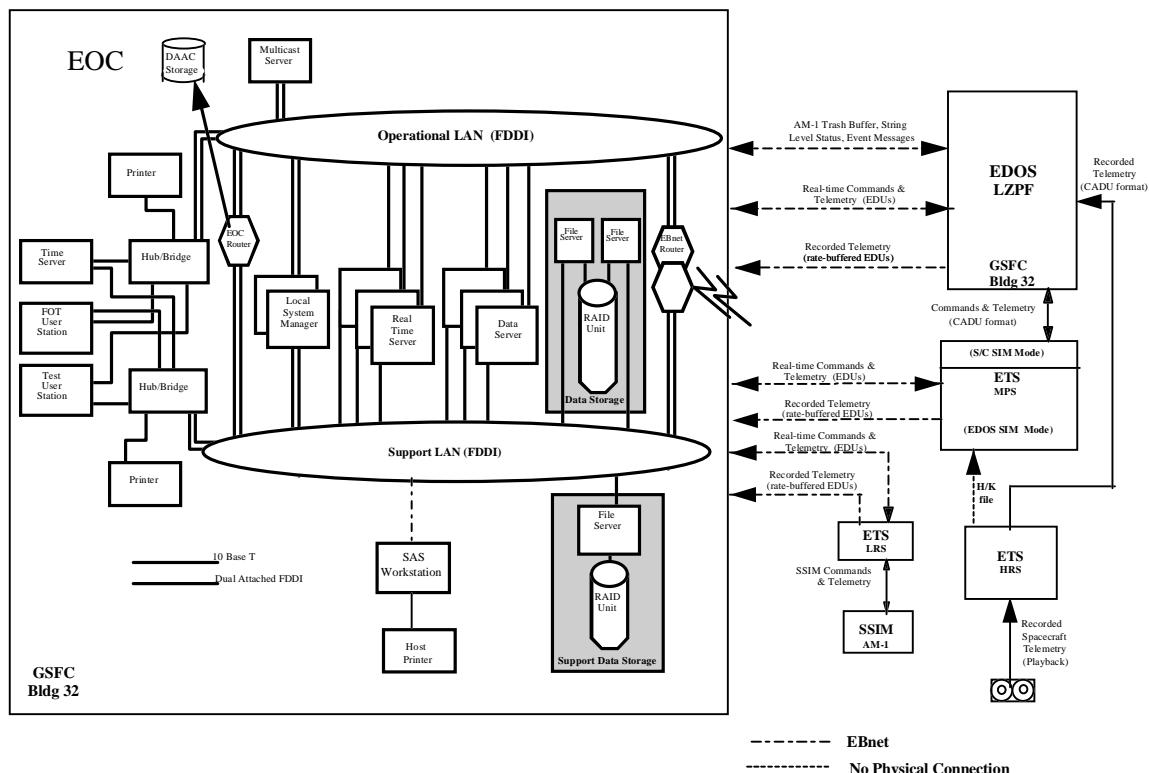


EXHIBIT EOC4-1.1: Telemetry Analysis using the SAS, EOC, EDOS, ETS, and/or the SSIM

Test Data:

Description / Characteristics	Source	File/script name and physical location
AM-1 real-time data in CCSDS telemetry (TLM) packets in the form of Path Service EDUs (one of each TLM value bit size - 1, 8,	ETS, SSIM, AM-1 S/C, FOS DMS, or SDPS	rt_hk.scn

Description / Characteristics	Source	File/script name and physical location
<p>16, 32, 48; representative set of both discrete and analog parameters):</p> <ul style="list-style-type: none"> • S/C bus and instrument H/K telemetry data (16 kbps, APID = 1, VCID = 1) 	EOC1 Test Data	
<p>AM-1 recorded data in CCSDS telemetry packets in the form of recorded EDUs (one of each TLM value bit size - 1, 8, 16, 32, 48) in rate-buffered data files (each file limited to a single APID type,):</p> <ul style="list-style-type: none"> • S/C bus and instrument H/K telemetry data (256 kbps, APID = 1, VCID = 1; 150 Mbps [ETS HRS and AM-1 S/C only], APID = 1, VCID = 11) 	<p>ETS, SSIM, AM-1 S/C, FOS DMS, or SDPS</p> EOC1 Test Data	playback.scn
<p>AM-1 real-time data in CCSDS telemetry (TLM) packets in the form of Path Service EDUs (one of each TLM value bit size - 1, 8, 16, 32, 48):</p> <ul style="list-style-type: none"> • S/C bus and instrument H/K telemetry data (16 kbps, APID = 1, VCID = 1) with red & yellow high/low, and delta limit violations; and limit selection S/C bus H&S telemetry data (1 kbps, APID = 2, VCID = 2) with red & yellow high/low, and delta limit violations; and limit selection 	<p>ETS, SSIM, AM-1 S/C, FOS DMS, or SDPS</p> EOC1 Test Data	eulimhk.scn eulimhs.scn deltalim.scn limitsel.scn
<p>AM-1 real-time data in CCSDS telemetry packets in the form of Path Service EDUs (containing at a minimum: one of each telemetry sample type - current, voltage, temperature, power; one of each of the telemetry point source type - real or raw data, flight software generated data, pseudo or derived data, passive analog, and active analog; one of each possible APID/VCID combination; one of each analog EU conversion type - line segment [up to 15 line segments - 1, 2, 5, 8, 11, 14, 15]; polynomial [1st, 2nd, 3rd, 4th, 5th, 6th, and 7th order]); exponential; one of each discrete type (bit sizes - 1, 3, 8).</p>	<p>ETS, SSIM, AM-1 S/C, FOS DMS, or SDPS</p> EOC1 Test Data	eulimhk.scn eulimhs.scn
<p>AM-1 real-time data in CCSDS telemetry packets in the form of Path Service EDUs (containing at a minimum: one of each possible APID/VCID combination) which are context dependent.</p>	<p>ETS, SSIM, AM-1 S/C, FOS DMS, or SDPS</p> EOC1 Test Data	TBS-4 context scn
<p>AM-1 real-time data in CCSDS telemetry packets in the form of Path Service EDUs (containing at a minimum: one of each possible APID/VCID combination) which are derived.</p>	<p>ETS, SSIM, AM-1 S/C, FOS DMS, or SDPS</p> EOC1 Test Data	TBS-5 derived scn

Description / Characteristics	Source	File/script name and physical location
SCC memory dump data in the form of EDUs (1 kbps [all telemetry sources except SSIM], APID = 6, VCID = 3; 16 kbps, APID = 3, VCID = 3)	ETS, SSIM, AM-1 S/C, FOS DMS or SDPS via the EOC2 test	TBS-3
CTIU memory dump data in the form of EDUs (1 kbps [all telemetry sources except SSIM], APID = 6, VCID = 3; 16 kbps, APID = 3, VCID = 3)	ETS, SSIM, AM-1 S/C, FOS DMS or SDPS via the EOC2 test	TBS-3
instrument memory dump data in the form of EDUs for ASTER, CERES, MODIS, MISR, and MOPITT (1 kbps, APID = 6, VCID = 3; 16 kbps, APID = 3, VCID = 3)	AM-1 IOT, FOS DMS or SDPS via the EOC2 test	TBS-3
EDOS Customer Operations Data and Accounting (CODA) message data	EOC1 Test Data via the FOS DMS, ETS OMDSIM, or EDOS	TBS-6
Network Control Center (NCC) UPD message data	ICT9 Test or NCC or NCC simulator	TBS-7
Pre-defined user algorithms that modify telemetry parameters (C or C++)	AM-1 FOT and/or IOT	TBS-8

Test Case Descriptions:

Telemetry analysis tests will use the ETS (MPS and HRS) and/or SSIM as the telemetry sources. The telemetry will be forwarded from a S/C simulator to the ETS LRS or EDOS Version 3 and then to the EOC.

EOC4.1 Real-Time Analysis

Requirements to be Verified:

EOC-6010#B, EOC-6070#B, EOC-6140#B

This test verifies that the EOC can perform real-time (R/T) telemetry analyses to track performance and trends, and detect and isolate anomalies.

EOC is configured for R/T telemetry analysis. A R/T logical string is initialized on a R/T server. A mirrored or tailored connection is established. A set of temporary dynamic display pages are created through the selection of telemetry parameter selections using the FUI Quick Analysis tool. The display pages provide updating displays of R/T time telemetry data in several output views: Each type of output view (graph, table, info window, and alphanumeric window) will be exercised. The format option will be used to customize the graphical and tabulated output views.

Min-Max-Mean statistics will be generated for EDOS CODA and NCC UPD data being received in real-time. The S/C state check functionality will be exercised.

EOC4.2 Telemetry Replays

Requirements to be Verified:

EOC-5240#B, EOC-6010#B, EOC-7120#B

This test verifies that the EOC can perform dedicated and shared replays to assist in the analysis of historical telemetry data to track performance and trends, and detect and isolate anomalies.

The replay function is performed through the Replay Controller tool. The following specifications are entered or selected in the Replay Controller window: parameters for the logical string (e.g., S/C and ODB identifiers, data type, replay type, and replay rate); and the time frame (start and stop times) of the requested telemetry data. The request is submitted. A telemetry data request is sent to the FOS DMS (short-term archive) and the data server for the SDPS (long-term archive). The telemetry is retrieved, decommutated, and EU converted. The replay logical string(s) are specified, then requested. The request is accepted if all the required resources are available and no errors are detected.. If the resources are not available, the replay request is placed in queue to wait for the resources to become available. When the resources become available, a replay string or strings (dedicated or shared) are initialized. For the shared logical string, one of each type of connection (mirrored and tailored) is established. The following replay control features will be exercised: play, pause, step, stop, reset, and time change (begin time and step interval). The replay request is tracked/monitored immediately following its submission, up to the time of completion.

EOC4.3 Standing Orders

Requirements to be Verified:

EOC-6100#B

This test verifies that the EOC can create and execute standing orders that perform repetitive R/T and historical telemetry analyses automatically.

Two types of standing orders will be generated: Report Standing Orders using the report (custom, periodic, and on-demand) template builders and Analysis Standing Orders using the standing order option in the Analysis Request Builder. A standing order request includes the start and stop dates, request timespan, telemetry parameter selection(s), statistical specifications (if applicable), and desired output product(s). A Standing Order Browser tool is used to view, suspend, resume, delete, and modify all the standing orders in system; it also provides the status of a standing order. The following report standing orders will be generated: Parameters Out-of-Limits Report and the Time Ordered Downlink Report. **Add text on the role of the Standing Order Manager.**

EOC4.4 Analysis Requests and User-Defined Statistics Generation

Requirements to be Verified:

EOC-6010#B, EOC-6050#B, EOC-6070#B, EOC-6100#B,

EOC-6110#B, EOC-7120#B

This test verifies that the EOC can create and fulfill telemetry analysis requests, generate user-defined statistics, and apply pre-defined algorithms to received telemetry.

- Twenty analysis requests are submitted through the Analysis Request Builder for a selected set of historical telemetry data. The analysis requests specify the request processing site (local only or EOC only); data quality (all data, good data only); telemetry parameters; time periods; sampling rate (all data, changes only data, and data every Nth sample up to 32767); user-defined statistics; and/or algorithms required to generate analysis products. All sampling rates are exercised for various combinations of good and bad data. Each type of analysis product output view (telemetry attributes, graph, and table) is exercised. The format option is used to customize each type of output view. The remaining product related options (output dataset, input dataset, and carry-out file) are also exercised. Reports are created that contain plots and tables. These analysis request are tracked/monitored immediately following their submission, up to their time of completion.
- User-defined statistics (min-max-mean and standard deviation) for a specified time interval (between one second and 24 hours) are generated for a selected set of telemetry parameters. The resulting statistical datasets are archived and are retrieved for display via the FUI and/or report generation.

EOC4.5 System Statistics and Dataset Generation

Requirements to be Verified:

EOC-6050#B, EOC-6100#B

This test verifies that the EOC can generate system statistics and store them as datasets for display by the FOS User Interface (FUI).

- System statistics (analog, discrete, and limit) are automatically generated at the EOC for telemetry parameters on daily, monthly, orbital, and mission-to-date time spans. Statistical datasets are generated and archived. Each type of system statistics will be evaluated.
- Historical requests for selected archived statistics are submitted; these requests include request name, time interval (start/stop), and the telemetry parameter names. The selected archived statistics are chosen to ensure that the functionality of crossing operational database boundaries is exercised. Time spans are selected where two operational databases (ODB) were used.

EOC4.6 SSR Analysis

Requirements to be Verified:

EOC-6010#B, EOC-6110#B

This test verifies that the EOC can detect and isolate faults in Solid-State Recorder (SSR) playbacks, and take corrective measures by generating command requests and/or recommending other courses of action.

Faults in the Solid-State Recorder (SSR) playbacks are detected and isolated. The SSR H/K telemetry, EDOS SSR CODA, and the NCC link status are evaluated to ensure the receipt of SSR data. Loss of data information is provided via the CODA. Loss of signal information is provided via the Network Control Center (NCC) UPD. The SSR buffer pointers, buffer status, and playback state is monitored using the SSR Analysis tool. This tool also displays SSR parameters, and recording and playback counters in table and graph format. Data loss recovery and RF link problems and solutions, and command requests for playbacks are viewed via the scrolling list in the SSR Analysis window. A report of the state of the SSR at the end of a contact will be forwarded to the PAS and FUI for display.

EOC4.7 S/C Clock Correlation Analysis

Requirements to be Verified:

EOC-5187#B

This test verifies that the EOC can calculate discrepancies between the S/C Clock and Coordinated Universal Time (UTC), and generate discrepancy reports and corrective commands requests to adjust the S/C Clock.

The S/C clock drift error is calculated using the [Return Channel Time Delay \(RCTD\) method](#). The S/C clock drift error is then calculated using the User S/C Clock Calibration System (USCCS) method. The S/C clock time bias required for synchronizing the S/C clock relative to UTC is determined via both methods and corrective command requests are generated.

EOC4.8 Transfer, Archival, and Retrieval of Analysis Results

Requirements to be Verified:

No mission critical requirements applicable.

This test verifies that the EOC can store and retrieve analysis results (carry-out files and other analysis products) from the local EOC archive (short-term storage) and the GSFC DAAC (long-term storage). This test also verifies that carry-out files can be forwarded to the S/C Analysis System (SAS) and other appropriate recipients.

- The carry-out files are generated by the FOS Analysis Subsystem (FAS). They contain the following types of data: AM-1 S/C housekeeping data, AM-1 S/C health and safety data, and AM-1 diagnostic data, Network Control Center (NCC) UPD message data, and EDOS Customer Operations and Data Accounting (CODA) message data.
- Carry-out files and other analysis products are stored and received from the local EOC archive (short-term storage) and the GSFC DAAC (long-term storage).
- The SAS receives the carry-out files, SSR trash buffer files, and standard analysis products for specialized mission analyses that are not supported by the FOS Analysis Subsystem.
- A selected set of analysis products are provided via FUI displays and reports at the EOC.

Test procedures:

Test Set-Up:

Step	Station	Action	Expected Results	Comments
1	EOC	Initialize the FOS EOC hardware. Refer to the FOS Operations Tool Manual for the ECS Project, Section 4.2.1, Hardware Initialization, and Section 4.2.2, Initializing the DEC RAID and RAID Servers.	FOS EOC hardware: DEC RAID (opstrand on either cheetah or lion), RAID Server (supraid on cougar), Data Servers, Real-Time (R/T) Servers, and EOC User Stations (HP and Sun) are up and running.	RAID contains the users' home directories and the operational FOS software in /fos, which needs to be mounted by the other machines. The FOS EOC hardware is usually already initialized so this step will probably not be performed.
2	ETS (MPS)	Initialize the ETS MPS hardware (Power On).	ETS MPS hardware is up and running.	The ETS MPS hardware is usually already initialized so this step will probably not be performed.
3	EDOS	Initialize the EDOS hardware.	EDOS hardware is up and running.	
4	ETS (MPS) X-terminal	If the ets2 login window is not up, restart the server and select ets2. Login to the ETS X-terminal (UNIX OS). account: si_t <Return> password: [password] <Return>	The MPS Menu Controller appears with MPS and OMDSIM buttons.	Home directory: '/usr/si_t' MPS executable directory: '/usr/si_t/release/bin'
5	ETS (MPS) X-terminal	Bring-up the MPS Graphical User Interface (GUI). Type ets mps <Return>	Type mps Exec from the MPS Menu Controller Window.	The MPS main window appears
6	ETS (MPS) PDOS terminal	Reset the MVME177 card and bring-up the MPS software. Press the reset button for the MVME177 card. Login to the ETS PDOS terminal.	The following message is shown at the bottom of the PDOS terminal: MPS_CONFIG_PKT_FMT A MPS ready message is shown in the event log	The MVME 177 card and the PDOS terminal are in the back room. Use Option 2.

Step	Station	Action	Expected Results	Comments
		Change to the directory where the MPS startup script resides. Option 1: Type gotosi (alias cd 10:si_t[release121]) Option 2: Type cd /ets/dev	window of the MPS main window.	
7	ETS (MPS) X-terminal	Select S/C simulation mode for MPS. Select the Spacecraft radio button for Simulation Mode from the MPS main window.	The Spacecraft radio button is sensitized.	
8	ETS (MPS) X-terminal	Select the PDB as the data source for the telemetry being generated by the MPS. Select the PDB radio button under Data Source from the MPS main window.	The PDB radio button is sensitized.	
9	ETS (MPS) X-terminal	Set and record the SC and UTC times to the GMT time provided at the EOC. Select Set Time from the Control pull-down menu in MPS main window and enter the GMT time values or accept the GMT times provided by ETS.	The Spacecraft Time and UTC displays on the MPS main window are updated.	Use the following Unix command to help in defining GMT time: date -u Time Format: yy dd hh mm ss This step is optional.
10	EOC (Data & R/T Servers)	Start the Sybase servers on the Data Server and Real-Time Server. Refer to the FOS Operations Tool Manual for the ECS Project, Section 4.2.3, Sybase Server Initialization.	Sybase servers on the Data Servers have started.	The Sybase servers are usually already up and running so this step will probably not be performed.
11	~	Initialize FOS Software for the Real-Time Server and Data Server.		Refer to the FOS Operations Tool Manual for the ECS Project, Section 4.2.4, FOS Software Initialization.
12	EOC (User Station)	Login to an EOC User Station, “TBD-UWS” . Enter ivtest <Return> Enter [password] <Return>	Login window disappears. The workstation pull-down menu is accessible.	
13	EOC (User Station)	In a X-terminal window: Type netscape & <Return>	The NETSCAPE window appears.	

Step	Station	Action	Expected Results	Comments
		Check to see if any FOS process endpoints exist. Invoke the URL http://198.118.199.20/FosDbHome.html Select Nameserver Database. Click on Clear Form. Click on Submit	The FOS Database Access Page appears. A message is displayed which states that 0 endpoints are found.	
14	EOC (Data Server)	Start up the FOS software for the Data Server. In a X-terminal window, remotely login to the FOS Data Server, “ TBD-DS ”. Type rlogin TBD-DS <Return> or telnet TBD-DS <Return> Enter [password] <Return> at password prompt. Type ps -ef <Return> ; look for FOS processes and delete them using the kill -9 [PID] . Type test <Return> (alias for cd /fos/test/am1/scripts/setup)	Twenty-eight FOS software processes are now running on the Data Server. System messages which show the software loading sequence are displayed. The following final message is displayed: TBD .	login has a -l <username> option to specify the user or it defaults to the login account name. PID stands for process ID. Alias test will be used to change directory.
15	EOC (Real-Time Server)	Type source A2_DataServerStartup <Return> Start up the FOS software for the Real-Time Server. In a X-terminal window, remotely login to the FOS Real-Time Server, “ TBD-RTS ”. Type rlogin TBD-RTS <Return> or telnet TBD-RTS <Return> Enter [password] <Return> at password prompt. Type ps -ef <Return> ; look for FOS processes and delete them using the kill -9 [PID] . Type test <Return> (alias for cd /fos/test/am1/scripts/setup) Type source A2_RealTimeServerStartup	Thirty-three FOS software processes are now running on the Real-Time Server. R/T logical string 100 is created. System messages which show the software loading sequence are displayed. The following final message is displayed: TBD	login has a -l <username> option to specify the user or it defaults to the login account name PID stands for process ID. Alias test will be used to change directory.

Step	Station	Action	Expected Results	Comments
<Return>				
16	EOC (User Station)	Check to see if 28 FOS process endpoints exist for the Data Server. Click on Back . Enter TBD-DS in the Entry Id field. Click on Submit .	A message is displayed which states that 28 endpoints are found.	If any active FOS processes are left from a previous session, kill them using the following command: kill -9 [process ID]
17	EOC (User Station)	Check to see if 33 FOS process endpoints exist for the R/T Server. Click on Back . Enter TBD-RTS in the Entry Id field. Click on Submit .	A message is displayed which states that 33 endpoints are found.	If any active FOS processes are left from a previous session, kill them using the following command: kill -9 [process ID]
18	EOC (User Station)	Check to see if 0 FOS process endpoints exist for the User Station “ TBD-UWS ”. Click on Back . Enter “ TBD-UWS ” in the Entry Id field. Click on Submit .	A message is displayed which states that 0 endpoints are found.	If any active FOS processes are left from a previous session, kill them using the following command: kill -9 [process ID]
19	~	Exit Netscape.	Netscape window is no longer displayed.	Refer to the FOS Operations Tool Manual for the ECS Project, Section 5.1, FOS Login, and Section 5.2, FOS Userstation Startup.
20	EOC (User Station)	Start up the FOS software for the User Station, “ TBD-UWS ”. Login to the EOC User Station, “ TBD-UWS ” Enter ivtest3 <Return> Enter [password] <Return> In a terminal window, type test <Return> (alias for cd /fos/test/aml/scripts/setup)	The appropriate FOS software processes are now running on the EOC User Station. System messages which show the software loading sequence are displayed. Eight iconized Planning and Scheduling windows, and the Control Window appear, along with the FOS Login window.	The FOS software processes are the ODB and FOS subsystem processes. Use the Mini_Ctrl window.

Step	Station	Action	Expected Results	Comments
Type source A2_UserStationStartup <Return>				
21	EOC (User Station)	Login to the ECS Flight Operations System and select a role by following the instructions specified in Section 5.3, FOS Login, and Section 5.4, FOS Roles, of the FOS OTM.	Notification of successful login to the ECS Flight Operations System , confirming requested role authorization.0	
22	EOC (User Station)	Bring up the Global Event Display Window via the Tools Button on the Control Window.	The Global Event Display Window appears.	Make sure that Netscape is not up in any of the workstation rooms.
		Click on Tools . Select Event_Display_Global . Click on OK .		
23	EOC (User Station)	Disable telemetry data archiving. ARCHIVE TLM =DISABLE	An event message stating that telemetry archiving is disabled.	Archiving is automatically enabled when the R/T Server software is brought up.
24	EOC (User Station)	In a terminal window, invoke the script that generates the Test Configuration Report.	A file named test#Yr_config_eoc4.<date> , which contains the “As Run” Configuration details, is in the /home/ivvtest3/config directory.	A directory ~/config has already been created. Aliases config and tconfig have already been added to the ivvtest3 .cshrc .
		Type config (alias cd /home/ivvtest3/config) Type tconfig (alias /home/ivvtest3/scripts/tconfig.scr)		# is 1 thru 10. Y is d or f.
25	~	Type mv testconfig test#Yr_config_eoc4.<date> Record the system configuration on the execution cover sheet.	The “As Run” Configuration details are recorded on the execution cover sheet.	

Test Execution:

EOC4.1 Quick Analysis

Step	Station	Action	Expected Results	Comments
1	EOC (User Station)	Connect to this R/T logical string in mirrored mode. STRING CONNECT STRING=100 TLMTYPE=ALL CONFIG=MIRROR	A mirrored connection is established. An event message confirming that the connection to the logical string 100 was successful is displayed in the event display on the Control Window and in the Global Event Display Window .	100 is the <string ID> (e.g., STRING=100 or 1xx).
2	EOC (User Station)	Request Ground Control privilege for the R/T logical string 100 . TAKE GROUNDCONTROL STRING=100	Ground Control privilege for string 100 is obtained. An event message confirming that Ground Control privilege was granted is displayed in the event display on the Control Window and in the Global Event Display Window .	100 is the <string ID> (e.g., STRING=101 or 1xx). The Ground Control Privilege is granted to one EOC user per logical string for the purpose of modifying the ground configuration of the HW and SW resources within that logical string. These privileges are granted only to local EOC users (not IST) that are pre-authorized by the FOT to perform in these roles.
3		QUICK ANALYSIS	The dynamic page appears.	
4	EOC (User Station)	Open a dynamic page.	The dynamic page appears.	
5	EOC (User Station)	Invoke the Quick Analysis Tool.	The Quick Analysis window appears.	Refer to Section 7.10.2 in the FOS OTM.
6	~	Create a temporary alphanumeric telemetry display page.		
7	EOC (User Station)	Select the telemetry parameters to be displayed on the temporary alphanumeric display page.	Telemetry parameters for temporary alphanumeric display page are selected.	Exercise the parameter selection process from an active/open dynamic page and using the S/C subsystem filtering feature.

Step	Station	Action	Expected Results	Comments
8	EOC (User Station)	Select alphanumeric as the format for the temporary telemetry display page.	Alphanumeric is the selected format for the temporary display page.	
		Click on the Alphanumeric dialog button.	Alphanumeric dialog button in the Quick Analysis window is sensitized.	
9	EOC (User Station)	Monitor the telemetry using the temporary alphanumeric display page.	The telemetry parameter mnemonics are updating on the temporary alphanumeric display page as the telemetry is being received.	
10	~	Create a temporary telemetry attributes display page.		
11	EOC (User Station)	Select the telemetry parameters to be displayed on the temporary telemetry attributes display page.	Telemetry parameters for temporary telemetry attributes display page are selected.	
12	EOC (User Station)	Select telemetry attributes as the format for the temporary telemetry display page.	Telemetry Attributes is the selected format for the temporary display page.	
		Click on the Telemetry Attributes dialog button.	Telemetry Attributes dialog button in the Quick Analysis window is sensitized.	
13	EOC (User Station)	Monitor the telemetry using the temporary telemetry attributes display page.	The telemetry parameter mnemonics are updating on the temporary telemetry attributes display page as the telemetry is being received.	
14	~	Create a temporary graphical telemetry display page.		
15	EOC (User Station)	Select the telemetry parameters to be displayed on the temporary graphical display page.	Telemetry parameters for temporary graphical display page are selected.	
		Click on the Graph dialog button.	Graph is the selected format for the temporary display page.	
16	EOC (User Station)	Select graph as the format for the temporary telemetry display page.	Graph dialog button in the Quick Analysis window is sensitized.	
17	EOC (User Station)	Format the graph using the Graph Custom Dialog .	The graph specifications are defined.	Refer to Figure 7.10.2-3 in the FOS OTM.

Step	Station	Action	Expected Results	Comments
18	EOC (User Station)	Monitor the telemetry using the temporary graphical display page.	The telemetry parameter mnemonics are updating on the temporary graphical display page as the telemetry is being received.	
19	~	Create a temporary tabulated telemetry display page.		
20	EOC (User Station)	Select the telemetry parameters to be displayed on the temporary tabulated display page.	Telemetry parameters for temporary tabulated display page are selected.	Exercise the parameter selection process from an active/open dynamic page and using the S/C subsystem filtering feature.
21	EOC (User Station)	Select table as the format for the temporary telemetry display page.	Table is the selected format for the temporary display page.	
22	EOC (User Station)	Click on the Table dialog button.	Table dialog button in the Quick Analysis window is sensitized.	
23	EOC (User Station)	Format the table using the Table Custom Dialog .	The table specifications are defined.	Refer to Figure 7.10.2-2 in the FOS OTM.
24	EOC (User Station)	Monitor the telemetry using the temporary tabulated display page.	The telemetry parameter mnemonics are updating on the temporary tabulated display page as the telemetry is being received.	
25	EOC (User Station)	Close temporary displays.	Temporary display pages are closed.	
26	EOC (User Station)	Close the Quick Analysis tool.	The Quick Analysis window disappears/closes.	
27	~	CODA AND NCC UPD MIN-MAX-MEAN STATISTICS		
28	~	TBS - Add steps covering the Min-Max-Mean statistics being generated for EDOS CODA and NCC UPD in real-time.		
29	EOC (User Station)	S/C STATE CHECK	Exercise the S/C state checking and capturing capabilities using the STATE directive (which allows the selection of a S/C table to be used for	Verify successful manipulation of the S/C state checking and capturing processes.

Step	Station	Action	Expected Results	Comments
		state checking; the replacement of the expected state table with current telemetry values; the start of the S/C state check comparison; and the switching of the telemetry channel to be state checked). Refer to Section 9.10, S/C Telemetry Processing; Section 9.12, State Check; and Table A-3, ECL Directives, in the FOS OTM.		
30	EOC (User Station)	Save the Event_Display data in the test run directory. In Event_Display menu: Select File. Select Save As. Change the filter directory to the file destination directory. Enter test#Yr_evtlog#_eoc4-1.<date>	A message is displayed which states that the event display contents have been saved in test#Yr_evtlog#_eoc4-1.<date>. # is 1 through 10. Y is d or f.	Make sure that the event log filename includes the test name and the current date.
EOC4.2 Telemetry Replays				
Step	Station	Action	Expected Results	Comments
1	EOC (User Station)	The recorded telemetry display called <i>HEADERS2</i> and <i>PB</i> , which has pre-defined data sources, is invoked at the EOC user station.	The called <i>HEADERS2</i> and <i>PB</i> telemetry displays appear. The previously selected parameters (H/K and ground) appear on the display pages.	ECL directive <u>PAGE</u> opens page in the current room.
		P HEADERS2 P PB		
2	EOC (User Station)	Produce a window snapshot by following the instructions specified in Section 7.8, Snapshots, of the FOS OTM.	The contents of the terminal window is dumped to a file or printer.	
3	EOC (User Station)	Invoke the replay of rate-buffered data via the Replay Controller too! . Follow the instructions specified in Section 7.13, Data Replay Controller, of the FOS OTM.	A shared or dedicated R/T logical string is established.	
4	EOC (User Station)	Look for telemetry value changes and produce screen snapshots when CDH_NR_SSR2_HKRECTR (counter) is equal to 1, 3, 5, 7, 9, 11, 13, 16.	The HEADERS2 telemetry display shows the telemetry transmission beginning and ending. The PB telemetry display is being updated as it receives the telemetry sent and no parameter	EOC4-18

Step	Station	Action	Expected Results	Comments
		snap (alias for ‘xwd -root xpr -device ps lpr -dlw’) snap3 (alias for ‘xwd -root xpr -device ps lpr -dlw -P fose3oe’)	values change when the data transmission stops. The contents of the terminal window is dumped to a file or printer.	
		or Use Snapshot V3.4 on the User Station pull-down menu (produces color snapshots).		
5	EOC (User Station)	Printout screen snapshots generated using the FUI Snapshot feature.	Hardcopies of the screen snapshots appear at the designated printer.	
6	EOC (User Station)	Save the Event_Display data in the test run directory. In Event_Display menu: Select File . Select Save As . Change the filter directory to the file destination directory. Enter test#Yr_evtlog_eoc4-2.<date>	A message is displayed which states that the event display contents have been saved in test#Yr_evtlog_eoc4-2.<date> . # is 1 through 10. Y is d or f.	Make sure that the event log filename includes the test name and the current date.
7	~	Off-line, verify that the values of the parameter mnemonics shown in the snapshots match the values specified in column 1 of Table PB.	The values of the parameter mnemonics shown in the snapshots match.	
8	EOC (User Station)	Repeat steps 2-7 using various replay specifications.	All key replay functions are exercised.	
9	EOC	Generate telemetry processing reports. Display reports on-line and printed out for review off-line.	Reports are available in hardcopy and softcopy form.	
10	EOC	Forward the telemetry data, and related event and configuration data to the SDPS for permanent archival.	Telemetry data, and related event and configuration data are archived at the SDPS (GSFC DAAC).	

EOC4.3 Standing Orders

Step	Station	Action	Expected Results	Comments
1	EOC (User Station)	Invoke the Standing Order Tool. Via the Report Generator.	The Standing Order window appears.	
2	EOC (User Station)	Build a report standing order.	The report standing order is created.	Refer to Section 7.12 of the FOS OTM for report standing order option.
3	EOC (User Station)	Validate the contents of the standing order report.	The contents of the standing order report are correct/accurate.	
4	EOC (User Station)	Invoke the Standing Order Tool. Via the Analysis Request Builder.	The Standing Order window appears.	
5	EOC (User Station)	Build an analysis standing order.	The analysis standing order is created.	Refer to Section ?? of the FOS OTM for analysis standing order option.
6	EOC (User Station)	Validate the contents of the standing order report.	The contents of the standing order report are correct/accurate.	
7	EOC (User Station)	Save the Event_Display data in the test run directory. In Event_Display menu: Select File. Select Save As. Change the filter directory to the file destination directory. Enter test#Yr_evlog_eoc4-3.<date>	A message is displayed which states that the event display contents have been saved in test#Yr_evlog_eoc4-3.<date>. # is 1 through 10. Y is d or f.	Make sure that the event log filename includes the test name and the current date.

EOC4.4 Analysis Requests and User-Defined Statistics Generation

Step	Station	Action	Expected Results	Comments
1	EOC (User Station)	Bring up the Global Event Display Window via the Tools Button on the Control Window. Click on Tools. Select Event_Display_Global.	The Event Display Window appears.	Make sure that Netscape is not up in any of the workstation rooms.

Step	Station	Action	Expected Results	Comments
		Click on OK.		The event windows are configured to specification.
2	EOC (User Station)	Deselect TLM and bold DMS , RMS , and ANL for the Event_Display on User Station 1. Select all S/S and bold DMS , RMS , and ANL for the Event_Display on User Station 2. Click the GRAPH buttons on the event display windows to deselect the graph displays. Invoke the Analysis_Request_Builder tool.	Click on Tools button on the Control Window. Select Analysis_Request_Builder . Click on OK.	The request specifications (parameters with their sampling and statistics rates, and the request times) for AR1a appear on the Analysis Request Builder screen.
3	EOC (User Station)	Build analysis request AR1a using the information provided in the Analysis Requests Table in Appendix B. Follow the instructions in Section 10.2.1, Building an Analysis Request, of the FOS OTM. Enter the following Output DataSet Name : /fos/test/am1/datasets/ AR_1a .		Pair Time Selector is used to select the pair time(s) for telemetry data to be extracted from the FOS DMS and used for analysis product generation Analysis Telemetry Selector is used to select parameters and specify their sampling and statistics rates. The output data set name that is entered does not include the “.data” extension. The “.data” extension is added upon dataset generation.
4	EOC (User Station)		Enter /fos/test/am1/datasets/ AR_1a in the CarryOut File Name field. Click on the toggle button next to the field to enable the writing of the results to the file named AR_1a.data .	The toggle button is sensitized and the name /fos/test/am1/datasets/ AR_1a is displayed in the CarryOut File Name field.
5	EOC (User Station)		Save this request by selecting Save As from the File pull-down menu located on the top menu bar of the Analysis_Request_Builder , and entering the filename AR1a .	A message stating that the analysis request named AR1a is successfully saved is displayed in a pop-up notification window.

Step	Station	Action	Expected Results	Comments
6	EOC (User Station)	Open a new analysis request by selecting New from the File pull-down menu located on the top menu bar of the Analysis_Request_Builder , and entering the filename AR1b .	A blank analysis request form appears.	
7	EOC (User Station)	Build analysis request AR1b using the information provided in the Analysis Requests Table in Appendix B. Follow the instructions in Section 10.2.1, Building an Analysis Request, of the FOS OTM. Enter the following Output DataSet Name : /fos/test/am1/datasets/AR_1b .	The request specifications (parameters with their sampling and statistics rates, and the request times) for AR1b appear on the Analysis Request Builder screen.	<p>Pair Time Selector is used to select the pair time(s) for telemetry data to be extracted from the FOS DMS and used for analysis product generation</p> <p>Analysis Telemetry Selector is used to select parameters and specify their sampling and statistics rates.</p> <p>The output data set name that is entered does not include the “.data” extension. The “.data” extension is added upon dataset generation.</p>
8	EOC (User Station)	Enter /fos/test/am1/datasets/AR_1b in the CarryOut File Name field. Click on the toggle button next to the field to enable the writing of the results to the file named AR_1b.data .	The toggle button is sensitized and the name /fos/test/am1/datasets/AR_1b is displayed in the CarryOut File Name field.	The carryout file name that is entered does not include the “ .out ” extension. The “ .out ” extension is added upon carryout file generation.
9	EOC (User Station)	Save this request by selecting Save from the File pull-down menu located on the top menu bar of the Analysis_Request_Builder .	A message stating that the analysis request named AR1b is successfully saved is displayed in a pop-up notification window.	
10	EOC (User Station)	Open a new analysis request by selecting New from the File pull-down menu located on the top menu bar of the Analysis_Request_Builder , and entering the filename AR1c .	A blank analysis request form appears.	
11	EOC (User Station)	Build analysis request AR1c using the information provided in the Analysis Requests Table in Appendix B. Follow the instructions in Section 10.2.1, Building an Analysis Request, of the FOS OTM. Enter the following Output DataSet Name : /fos/test/am1/datasets/AR_1c .	The request specifications (parameters with their sampling and statistics rates, and the request times) for AR1c appear on the Analysis Request Builder screen.	<p>Pair Time Selector is used to select the pair time(s) for telemetry data to be extracted from the FOS DMS and used for analysis product generation</p> <p>Analysis Telemetry Selector is used to select parameters and</p>

Step	Station	Action	Expected Results	Comments
				specify their sampling and statistics rates. The output data set name that is entered does not include the “.data” extension. The “.data” extension is added upon dataset generation.
12	EOC (User Station)	Enter /fos/test/am1/datasets/AR_1c in the CarryOut File Name field. Click on the toggle button next to the field to enable the writing of the results to the file named AR_1c.data .	The toggle button is sensitized and the name /fos/test/am1/datasets/AR_1c is displayed in the CarryOut File Name field.	The carryout file name that is entered does not include the “.out” extension. The “.out” extension is added upon carryout file generation.
13	EOC (User Station)	Save this request by selecting Save from the File pull-down menu located on the top menu bar of the Analysis_Request_Builder .	A message stating that the analysis request named AR1c is successfully saved is displayed in a pop-up notification window.	
14	EOC (User Station)	Open AR1b . Rename it AR2b using the Save As option under the File pull-down menu located on the top menu bar of the Analysis_Request_Builder .	AR1b request contents is displayed. You receive a message that the request AR2b has been saved.	
15	EOC (User Station)	Build analysis request AR2b using the information provided in the Analysis Requests Table in Appendix B. Follow the instructions in Section 10.2.1, Building an Analysis Request, of the FOS OTM. Enter the following Output DataSet Name: /fos/test/am1/datasets/AR_2b	The request specifications (parameters with their sampling and statistics rates, and the request times) for AR2b appear on the Analysis Request Builder screen.	Pair Time Selector is used to select the pair time(s) for telemetry data to be extracted from the FOS DMS and used for analysis product generation Analysis Telemetry Selector is used to select parameters and specify their sampling and statistics rates. The output data set name that is entered does not include the “.data” extension. The “.data” extension is added upon dataset generation.
16	EOC (User Station)	Select the EOC Only radio button under the Request Processing Site label on the Analysis_Request_Builder screen.	The EOC Only radio button is sensitized.	Data will be processed using the R/T Server resources.

Step	Station	Action	Expected Results	Comments
17	EOC (User Station)	Select the Good Data radio button under the Data Quality label on the Analysis_Request_Builder screen.	The Good Data radio button is sensitized.	
18	EOC (User Station)	Enter /fos/test/am1/datasets/AR_2b in the Output DataSet Name field. Click on the toggle button next to the field to enable the writing of the results to the file named AR_2b.data .	The toggle button is sensitized and the name /fos/test/am1/datasets/AR_2b is displayed in the Output DataSet Name field.	The output data set name that is entered does not include the “ .data ” extension. The “ .data ” extension is added upon dataset generation.
19	EOC (User Station)	Enter /fos/test/am1/datasets/AR_2b in the CarryOut File Name field. Click on the toggle button next to the field to enable the writing of the results to the file named AR_2b.out .	The toggle button is sensitized and the name /fos/test/am1/datasets/AR_2b is displayed in the CarryOut File Name field.	The carryout file name that is entered does not include the “ .out ” extension. The “ .out ” extension is added upon carryout file generation.
20	EOC (User Station)	Save AR2b using the Save option under the File pull-down menu located on the top menu bar of the Analysis_Request_Builder .	A message stating that the request AR2b has been saved is received.	
21	EOC (User Station)	Open AR1b . Rename it AR3b using the Save As option under the File pull-down menu located on the top menu bar of the Analysis_Request_Builder .	AR1b request contents is displayed. You receive a message that the request AR3b has been saved.	
22	EOC (User Station)	Enter AR3b in the Request Name field.	AR3b appears in the Request Name text field.	
23	EOC (User Station)	Select the Local Only radio button under the Request Processing Site label on the Analysis_Request_Builder screen.	The Local Only radio button is sensitized.	Data will be processed locally.
24	EOC (User Station)	Select the Good Data radio button under the Data Quality label on the Analysis_Request_Builder screen.	The Good Data radio button is sensitized.	
25	EOC (User Station)	Enter /fos/test/am1/datasets/AR_3b in the Output DataSet Name field. Click on the toggle button next to the field to enable the writing of the results to the file named AR_3b.data .	The toggle button is sensitized and the name /fos/test/am1/datasets/AR_3b is displayed in the Output DataSet Name field.	The output data set name that is entered does not include the “ .data ” extension. The “ .data ” extension is added upon dataset generation.
26	EOC	Enter /fos/test/am1/datasets/AR_3b in the	The toggle button is sensitized and the name	The carryout file name that is

Step	Station	Action	Expected Results	Comments						
27	(User Station)	CarryOut File Name field. Click on the toggle button next to the field to enable the writing of the results to the file named AR_3b.data .	/fos/test/aml/datasets/AR_3b is displayed in the CarryOut File Name field.	entered does not include the ".out" extension. The ".out" extension is added upon carryout file generation.						
28	EOC (User Station)	Save AR3b using the Save option under the File pull-down menu located on the top menu bar of the Analysis Request Builder . ADD ANALYSIS REQUEST GENERATION STEPS FOR 12 MORE ANALYSIS REQUESTS.	A message stating that the request AR3b has been saved is received.							
29	EOC (User Station)	Access the Sybase repository directly to view and monitor the analysis request entries. In a terminal window, open a script file by typing the following: script ~/eoc4/testfr1/eoc4.4/anreq_status	All entries in the queue are sent to the screen. The following information is displayed: <table> <tr> <td>requestid</td> <td>Specific ID of the analysis request</td> </tr> <tr> <td>status</td> <td>0 = Pending, 1 = Active</td> </tr> <tr> <td>requesttime</td> <td>EOC time that the request was submitted (J2000)</td> </tr> </table> Log into the Sybase server by entering (from the system prompt): sql (alias isql -Ufos_dba -Pfos_dba)	requestid	Specific ID of the analysis request	status	0 = Pending, 1 = Active	requesttime	EOC time that the request was submitted (J2000)	Release A: The user accesses the Sybase repository directly to view and monitor the queue entries. Release B: The Analysis monitoring capability will not be complete until Release B.
requestid	Specific ID of the analysis request									
status	0 = Pending, 1 = Active									
requesttime	EOC time that the request was submitted (J2000)									
30	EOC (User Station)	When in Sybase, enter: > use aml_fos_ops > go	Select all entries in the request queue: > select * from fos_request_queue > go Do not hit <Return>.	The AR1a analysis request form appears.						
31	EOC (User Station)	Open the analysis request AR1a by using the Open option on the File pull-down menu located on the top menu bar of the Analysis Request Builder .	Click on the OK push button in the Analysis Request Builder window to submit the request.	The Analysis_Request_Builder tool window closes. Event message(s) stating that the analysis creation of logical string(s) for						

Step	Station	Action	Expected Results	Comments
	Station)	request.	request AR1a has been successfully submitted are displayed in the Global Event Display Window .	the analysis request are displayed. Eventually, a notification that the Analysis Request AR1a has started is received.
32	EOC (User Station)	Invoke the Analysis_Request_Builder tool. Click on Tools button on the Control Window . Select Analysis_Request_Builder . Click on OK .	Analysis_Request_Builder screen appears.	
33	EOC (User Station)	Open the analysis request AR1b by using the Open option on the File pull-down menu located on the top menu bar of the Analysis_Request_Builder .	The AR1b analysis request form appears.	
34	EOC (User Station)	Click on the OK push button in the Analysis_Request_Builder window to submit the request.	The Analysis_Request_Builder tool window closes. Event message(s)stating that the analysis request AR1b has been successfully submitted are displayed in the Global Event Display Window .	Event messages related to the creation of logical string(s) for the analysis request are displayed. Eventually, a notification that the Analysis Request AR1b has started is received.
35	EOC (User Station)	Invoke the Analysis_Request_Builder tool. Click on Tools button on the Control Window . Select Analysis_Request_Builder . Click on OK .	Analysis_Request_Builder screen appears.	
36	EOC (User Station)	Open the analysis request AR1c by using the Open option on the File pull-down menu located on the top menu bar of the Analysis_Request_Builder .	The AR1c analysis request form appears.	
37	EOC (User Station)	Click on the OK push button in the Analysis_Request_Builder tool window to submit the request.	The Analysis_Request_Builder tool window closes. Event message(s)stating that the analysis request AR1c has been successfully submitted are displayed in the Global Event Display Window .	Event messages related to the creation of logical string(s) for the analysis request are displayed. Eventually, a notification that the Analysis Request AR1c has started is

Step	Station	Action	Expected Results	Comments
38	EOC (User Station)	Invoke the Analysis_Request_Builder tool. Click on Tools button on the Control Window . Select Analysis_Request_Builder . Click on OK .	Analysis_Request_Builder screen appears.	received.
39	EOC (User Station)	Open the analysis request AR2b by using the Open option on the File pull-down menu located on the top menu bar of the Analysis_Request_Builder .	The AR2b analysis request form appears.	
40	EOC (User Station)	Click on the OK push button in the Analysis_Request_Builder window to submit the request.	The Analysis_Request_Builder tool window closes. Event message(s) stating that the analysis request AR2b has been successfully submitted are displayed in the Global Event Display Window .	Event messages related to the creation of logical string(s) for the analysis request are displayed. Eventually, a notification that the Analysis Request AR2b has started is received.
41	EOC (User Station)	Invoke the Analysis_Request_Builder tool. Click on Tools button on the Control Window . Select Analysis_Request_Builder . Click on OK .	Analysis_Request_Builder screen appears.	
42	EOC (User Station)	Open the analysis request AR3b by using the Open option on the File pull-down menu located on the top menu bar of the Analysis_Request_Builder .	The AR3b analysis request form appears.	
43	EOC (User Station)	Click on the OK push button in the Analysis_Request_Builder window to submit the request.	The Analysis_Request_Builder tool window closes. Event message(s) stating that the analysis request AR3b has been successfully submitted are displayed in the Global Event Display Window .	Event messages related to the creation of logical string(s) for the analysis request are displayed. Eventually, a notification that the Analysis Request AR3b has started is received.
44	EOC (User Station)	Return to the scripting window for the Sybase repository that allows viewing and monitoring of recorded in the scripting file, anlreq_status . The	The Sybase query results are displayed and be active. This correlates to	Eight analysis requests should

Step	Station	Action	Expected Results	Comments
45	Station) EOC (User Station)	the analysis request queue entries. <Return> after the go command.	Type active analysis requests appear on the analysis queue entry list.	AR1b, AR2b, and AR3b with two analysis time spans each (six analysis requests); AR1a and AR1c each have one analysis time span (two analysis requests).
46	EOC (User Station)	Produce a screen snapshot of the Sybase query results. snap (alias for ‘xwd -root xpr -device ps lpr -dlw’) or map3 (alias for ‘xwd -root xpr -device ps lpr -dlw -P fose3oe’) or snapshot3 (alias for ‘xwd -frame xpr -device ljet -rv lp -onb -s -d fose3oe’)	Screen dump to a printer that contains a request queue list with eight analysis requests.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both. Release B: Use the FUJ Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both. Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both. Release B: Use the FUJ Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.
47	~	Snapshots of Sybase query results.		Steps 169-171 for taking snapshots of the Sybase queries

Step	Station	Action	Expected Results	Comments
48	EOC (User Station)	Return to the scripting window for the Sybase repository that allows viewing and monitoring of the analysis request queue entries. Select all entries in the request queue: > select * from fos_request_queue > go	The Sybase query results are displayed and recorded in the scripting file, anreq_status . The active analysis requests appear on the analysis queue entry list.	can be repeated more than the two times specified in this test.
49	EOC (User Station)	Produce a screen snapshot of the Sybase query results. snapshot (alias for ‘xwd -root xpr -device ps lpr -dlw’) or snapshot3 (alias for ‘xwd -root xpr -device ps lpr -dlw -P fos3oe’) or snapframe3 (alias for ‘xwd -frame xpr -device ljet -rv lp -onb -s -d fos3oe’)	Screen dump to a printer that contains a request queue list with four or less analysis requests.	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both. Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.
50	~	Snapshots of the analysis related event messages displayed in the Global Event Display window.		Steps 173-174 for taking snapshots of the analysis related event messages can be repeated more than the two times specified in this test.
51	EOC (User Station)	Produce screen snapshots of the event messages in the Global Event Display window until all of the analysis requests have completed. snapshot (alias for ‘xwd -root xpr -device ps lpr -dlw’) or snapshot3 (alias for ‘xwd -root xpr -device ps lpr -dlw -P fos3oe’) or	Screen dump to a printer that contains analysis related event messages (ANL , TLM , DMS , and RMS).	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both. Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.

Step	Station	Action	Expected Results	Comments
		snapframe3 (alias for ‘xwd -frame xpr -device ljet -rv lp -onb -s -d fose3oe’)		
52	~	Snapshots of Sybase query results.		
53	EOC (User Station)	Return to the scripting window for the Sybase repository that allows viewing and monitoring of the analysis request queue entries. Select all entries in the request queue: > select * from fos_request_queue > go	The Sybase query results are displayed and recorded in the scripting file, anreq_status . The active analysis requests appear on the analysis queue entry list.	This return to Sybase is due to the completion of all of the analysis requests - event notifications received.
54	EOC (User Station)	Produce a screen snapshot of the Sybase query results. snap (alias for ‘xwd -root xpr -device ps lpr -dlw’) snap3 (alias for ‘xwd -root xpr -device ps lpr -dlw -P fose3oe’)	Screen dump to a printer that contains an empty request queue list. or	Release A: Generate a UNIX script to take a screen snapshot and send it to a printer, file, or both. Release B: Use the FUI Screen Snapshot feature to take a screen snapshot and send it to a printer, file, or both.
55	EOC (User Station)	snapframe3 (alias for ‘xwd -frame xpr -device ljet -rv lp -onb -s -d fose3oe’)		
56	EOC (User Station)	Return to the scripting window for the Sybase repository that allows viewing and monitoring of the analysis request queue entries. Terminate the Sybase query session: > quit	The Sybase prompt ‘>’ disappears and the UNIX User Station prompt appears.	
57	~	Close the script file, anreq_status , by typing the following in the scripting terminal window: CTRL-D.	A message is displayed that informs you of the closure of the script file.	Refer to TLM2160B, R/T Telemetry Archive and Merge, in the FOS Release B I&T Procedures.
58	EOC (User Station)	View metadata of archived data using the archive tool (TBS).	A message is displayed which states that the event display contents have been saved in	Make sure that the event log

Step	Station	Action	Expected Results	Comments
59	Station)	Select File. Select Save As. Change the filter directory to the file destination directory. Enter test#Yr_evtlog#_eoc4-4.<date>	test#Yr_evtlog#_eoc4-4.<date>	filename includes the test name and the current date. # is 1 through 10. Y is d or f.
		~	The dataset product, carry-out file, contains the following information: FOS and AM-1 PDB parameter IDs; values (raw, EU converted, or decoded); data type (real, integer, or string); quality status indicator; out of limits indicator (red and yellow high, low, or delta); conversion error indicator; and invalid mnemonic and EU conversion indicators. The number of samples listed for each parameter matches the number of available selections in the time frame. Each mnemonic contains a spacecraft time for each occurrence. The time tag includes year, day, hour, minute, second, and millisecond. Statistical reports contain the correct min-mean-max and standard deviation values, and time/duration of limit violations (if applicable). The metadata is correct.	

EOC4.5 System Statistics and Dataset Generation TBS

Step	Station	Action	Expected Results	Comments
1	EOC			

Step	Station	Action	Expected Results	Comments
1	EOC (User Station)			

EOC4.6 SSR Analysis TBS

Step	Station	Action	Expected Results	Comments
1	EOC (User Station)			

EOC4.7 S/C Clock Correlation Analysis TBS

Step	Station	Action	Expected Results	Comments
1	EOC (User Station)			

EOC4.8 Transfer, Archival, and Retrieval of Analysis Results

Step	Station	Action	Expected Results	Comments
1	EOC (User Station)	Change to the directory where the analysis requests reside. cd /fos/test/AM1/data/FUI/requests	The current working directory is /fos/test/AM1/data/FUI/requests .	
2	EOC (User Station)	Verify that the analysis requests reside in that directory. ls -la A*	The following files are in the directory listing: AR1a AR1b AR1c AR2b AR3b	
3	EOC (User Station)	Change to the directory where the analysis datasets, statistics datasets, and metadata files reside. cd /fos/test/am1/datasets	The current working directory is /fos/test/am1/datasets .	
4	EOC (User Station)	Verify that the analysis datasets, statistics datasets, and metadata files reside in that directory. ls -la A*	The following files are in the directory listing: AR_1a.data AR_1a.metadata AR_1a.stats.data AR_1a.stats.metadata AR_1b.data AR_1b.metadata AR_1b.stats.data AR_1b.stats.metadata AR_1c.data AR_1c.metadata AR_1c.stats.data AR_1c.stats.metadata	

Step	Station	Action	Expected Results	Comments
			AR_2b.data AR_2b.metadata AR_2b.stats.data AR_2b.stats.metadata AR_3b.data AR_3b.metadata AR_3b.stats.data AR_3b.stats.metadata	
5	~	TBS - Add analysis results transfer steps. This includes data transfers to the SAS, GSFC DAACs, etc.		
Test Termination:				

Step	Station	Action	Expected Results	Comments
1.	EOC (User Station)	Shutdown the FOS applications and hardware following the instructions specified in Section 4.3, System Shutdown, of the FOS OTM.	A series of messages stating that FOS processes are being killed is displayed. All FUI windows have disappeared. FOS applications and hardware are shutdown	
2	EOC	End the remote login sessions.	The remote login sessions end and a message is displayed that reflects the session logouts. The UNIX prompts for TBD-RTS and TBD-DS return to the regular User Station (foseXoe) prompt.	
3	EOC	Log off the EOC UNIX workstation(s).	UNIX login sessions end.	
4	ETS (MPS) PDOS terminal	Execute the MPS shutdown script. Change to the directory where the MPS shutdown script resides and type CLEAR at the PDOS terminal prompt; then type It at the same prompt.	All the MPS task processes are killed-- they no longer appear in the task process listing.	
5	ETS (MPS) X-terminal	Exit the MPS main window.	The MPS main window disappears.	

Step	Station	Action	Expected Results	Comments
6	ETS (MPS) X- terminal	Logout of the ETS X-terminal used for the MPS GUI.	UNIX login session ends.	

Appendix A: Test Package Requirements Summary

Note: These testcases address either Release A, Release B, or both the Release A and B requirements to which they are mapped. Refer to each individual testcase section for requirement mapping specifics.

Requirement	Description	Testcase(s)
EOC-5187#B	The EOC shall have the capability to determine the spacecraft clock time bias required for synchronizing the spacecraft clock relative to Coordinated Universal Time (UTC).	EOC4.7
EOC-5240#B	The EOC shall be able to process history and archived spacecraft recorder data at rates up to 150 kbps.	EOC4.2
EOC-6010#A	The EOC shall provide the capability to perform analysis on real-time telemetry data and spacecraft recorder housekeeping data. Clarification => A: RT HK data	EOC4.4
EOC-6010#B	The EOC shall provide the capability to perform analysis on real-time telemetry data, spacecraft recorder housekeeping data, and data from the EOC history log.	EOC4.1, EOC4.2, EOC4.4, EOC4.6
EOC-6050#A EOC-6050#B	The EOC shall provide the capability to determine, for specified parameters over a specified time interval, at a minimum the following: a. Minimum value b. Maximum value c. Mean value d. Standard deviation of the parameter e. Time and duration of limit violations	EOC4.4, EOC4.5 (#B only)
EOC-6070#A EOC-6070#B	The EOC shall provide the capability to time-correlate related spacecraft parameters.	EOC4.1 (#B only), EOC4.4
EOC-6100#A EOC-6100#B	The EOC shall provide the capability to perform trend analysis on spacecraft and instrument housekeeping parameters.	EOC4.4, EOC4.5(#B only)
EOC-6110#B	The EOC shall provide the capability to monitor and evaluate the spacecraft functions, resources, and performance, including at a minimum the following: a. Stored command processing b. Spacecraft recorders c. Safe mode processes d. Electrical power subsystem e. Propulsion subsystem	EOC4.4, EOC4.6
EOC-6140#B	The EOC shall provide the capability to maintain a record of the spacecraft and instrument configuration, including the state of all spacecraft subsystems and instruments.	EOC4.1

Requirement	Description	Testcase(s)
EOC-7060#A (a, b, g)	<p>The EOC shall maintain a history log for the spacecraft and instruments for the most recent 7 days, including at a minimum the following:</p> <ul style="list-style-type: none"> a. All messages sent and received b. Telemetry data c. Operator requests/directives d. Real-time commands e. Stored command loads f. Memory loads and dumps g. Limits violations h. Error conditions i. Warnings k. Spacecraft and instrument status information l. Executed schedules m. Analysis results n. Responses to operator requests o. User interface language procedures as they were executed p. EOC reconfiguration information q. Master ground image <p>A: Limited archive and event messages.</p>	EOC4.4 (#A only)
EOC-7120#A EOC-7120#B	<p>The EOC shall be capable of extracting data sets from the history log by specifying time and data type to include as a minimum: telemetry, command, non-telemetry messages, operator directives, events, or limits violations.</p>	EOC4.4, EOC4.2 (#B only)

Appendix B: Analysis Requests Table

ADD 12 MORE ANALYSIS REQUESTS TO THIS TABLE (TBS)

Request Name	Request Reprocessin g Site	Data Quality	Start Time	Stop Time (Test Source)	Parameters	Instrument/Subsystem Path	Sampling Rate	Statistics Rate
AR1a	EOC Only	All Data	1997/027 21:40:33 (RT-HK)	1997/027 21:45:33 (RT-HK)	AST_VA_AA_SPARE01	AM1_AST_V	2 nd Sample	1 minute
					CDH_NR_SSR2_HKRECTR	AM1_CDH_N	2 nd Sample	1 minute
					EAS_BR_HGA_BOOMA_ARM	AM1_EAS_B	2 nd Sample	1 minute
					EPS_SR_SA_RAT_ADJ_A	AM1_EPS_S	2 nd Sample	1 minute
					SDU_SCTIME	AM1_SDU	Changes Only	
					SDU_PCKT_APID	AM1_SDU	Changes Only	
					SDU_PACKET_SEQ	AM1_SDU	Changes Only	
					SDU_PACKET_LENGTH	AM1_SDU	Changes Only	
AR1b	EOC Only	All Data	1997/035 02:41:49 (EU-HK)	1997/035 02:53:26 (EU-HK)	COM_PR_SBT1_FWD_RF	AM1_COM_P	Changes Only	20 seconds
					COM_SR_SBT1_DOP_SUM	AM1_COM_S	7 th Sample	40 seconds
					GNC_NR_FSS_NALPHA	AM1_GNC_N	5 th Sample	40 seconds
					MIS_IR_CAMERA_AN28V	AM1_MIS_I	Changes Only	20 seconds
					TCS_IR_BATHCE_EPCA	AM1_TCS_J	4 th Sample	40 seconds
					PMS_TR_PMEA1	AM1_PMS_T	3 rd Sample	40 seconds
					MOD_TP_AO_PZ_BY_RC	AM1_MOD_T	All Data	20 seconds
					CDH_CR_ACT_DAT_CHI	AM1_CDH_C	Changes Only	20 seconds
					CDH_SR_ACT_CLCW_STAT	AM1_CDH_S	Changes Only	20 seconds
					SDU_SCTIME	AM1_SDU	Changes Only	
					SDU_PCKT_APID	AM1_SDU	Changes Only	
					SDU_PACKET_SEQ	AM1_SDU	Changes Only	
					SDU_PACKET_LENGTH	AM1_SDU	Changes Only	
AR1b	EOC Only	All Data	1997/035 02:59:38 (EU-H&S)	1997/035 03:05:21 (EU-H&S)	COM_PR_SBT1_FWD_RF	AM1_COM_P	Changes Only	20 seconds
					GNC_NR_FSS_NALPHA	AM1_GNC_N	5 th Sample	40 seconds
					TCS_IR_BATHCE_EPCA	AM1_TCS_I	4 th Sample	40 seconds
					PMS_TR_PMEA1	AM1_PMS_T	3 rd Sample	40 seconds

Request Name	Request Reprocessin g Site	Data Quality	Start Time	Stop Time (Test Source)	Parameters	Instrument/Subsystem Path	Sampling Rate	Statistics Rate
					MOD_TP_AO_PZ_BY_RC	AM1_MOD_T	All Data	20 seconds
					CDH_CR_ACT_DAT_CH1	AM1_CDH_C	Changes Only	20 seconds
					SDU_SCTIME	AM1_SDU	Changes Only	
					SDU_PCKT_APID	AM1_SDU	Changes Only	
					SDU_PACKET_SEQ	AM1_SDU	Changes Only	
					SDU_PACKET_LENGTH	AM1_SDU	Changes Only	
AR1c	EOC Only	All Data	1997/035 04:42:23	1997/035 04:45:34 (EU-Delta)	MIS_IR_CAMERA_AN28V	AM1_MIS_I	All Data	30 seconds
					MIS_IR_CAMERA_BA28V	AM1_MIS_I	All Data	30 seconds
					MIS_IR_CAMERA_DA28V	AM1_MIS_I	All Data	30 seconds
					SDU_SCTIME	AM1_SDU	Changes Only	
					SDU_PCKT_APID	AM1_SDU	Changes Only	
					SDU_PACKET_SEQ	AM1_SDU	Changes Only	
					SDU_PACKET_LENGTH	AM1_SDU	Changes Only	
AR2b	EOC Only	Good Data Only	1997/035 02:41:49	1997/035 02:53:26 (EU-HK)	Same Parameters as AR1b.	Same as AR1b.	Same as AR1b	Same as AR1b
AR2b	EOC Only	Good Data Only	1997/035 02:59:38	1997/035 03:05:21 (EU-H&S)	Same Parameters as AR1b.	Same as AR1b.	Same as AR1b	Same as AR1b
AR3b	Local Only	Good Data Only	1997/035 02:41:49	1997/035 02:53:26 (EU-HK)	Same Parameters as AR1b.	Same as AR1b.	Same as AR1b	Same as AR1b
AR3b	Local Only	Good Data Only	1997/035 02:59:38	1997/035 03:05:21 (EU-H&S)	Same Parameters as AR1b.	Same as AR1b.	Same as AR1b	Same as AR1b